

CLAIMS

1. A processing circuit for a spectrometry chain including a particle radiation detector (21),
5 including a charge preamplifier stage (20) receiving a pulsed current (I1) from the detector, representative of the amount of charges emitted by a particle which has interacted with the detector, an integrator stage (26) with an integrator of a differentiator stage (25)
10 connected between the charge preamplifier stage (20) and the integrator stage (26), the differentiator stage (25) receiving a signal (V1) from the charge preamplifier stage (20) and delivering to the integrator stage (26), a signal (V2) image of the
15 detector current (I1), the integrator stage (26) delivering an image (V3) of the amount of charges emitted by a particle which has interacted with the detector, characterized in that the integrator stage (26) includes means (28, 29, SW'1, SW'2) for
20 substantially controlling the integration time during the duration of each pulse of the detector current.

2. The processing circuit according to claim 1, characterized in that the charge preamplifier
25 stage (20) includes a discrete or integrated amplifier (A'1) mounted as a current integrator.

3. The processing circuit according to any of claims 1 or 2, characterized in that the
30 differentiator stage (25) includes an operational amplifier (A') mounted as a differentiator.

4. The processing circuit according to any of claims 1 to 3, characterized in that the integrator stage (26) includes an operational amplifier (A'2) mounted as an integrator.

5

5. The processing circuit according to any of claims 1 to 4, characterized in that the means for controlling the integration time include a first switch (SW'1) inserted between the integrator and the output
10 of the differentiator stage (25), a second switch (SW'2) for resetting the integrator to zero, a logic circuit (28) for controlling the switches, a comparator (24) for enabling the logic circuit (28) according to the result of a comparison between the signal, image of
15 the detector current (B2), and a threshold (s').

6. A spectrometry chain including a particle radiation detector (21), characterized in that it includes downstream from the detector (21), a
20 processing circuit according to any of claims 1 to 5.

7. The spectrometry chain according to claim 6, characterized in that it includes a circuit for acquiring (27) the signal (V3) delivered by the
25 integrator stage (26) of the processing circuit, this acquisition circuit (27) including a analog/digital converter (27.2) followed by a memory (27.1).

8. The spectrometry chain according to
30 claim 7, characterized in that a signal (ACT) delivered

by the logic circuit (28) conditions the acquisition time.

9. The spectrometry chain according to any of claims 6 to 8, characterized in that the detector
5 (21) is inserted with a resistor (R'p) into a divider bridge circuit.

10. The spectrometry chain according to any of claims 6 to 9, characterized in that the detector
10 (21) is a semiconductor detector.

11. The spectrometry chain according to claim 10, characterized in that the semiconducting material is selected from the group comprising CdZnTe,
15 CdTe:Cl, CdTe:In.